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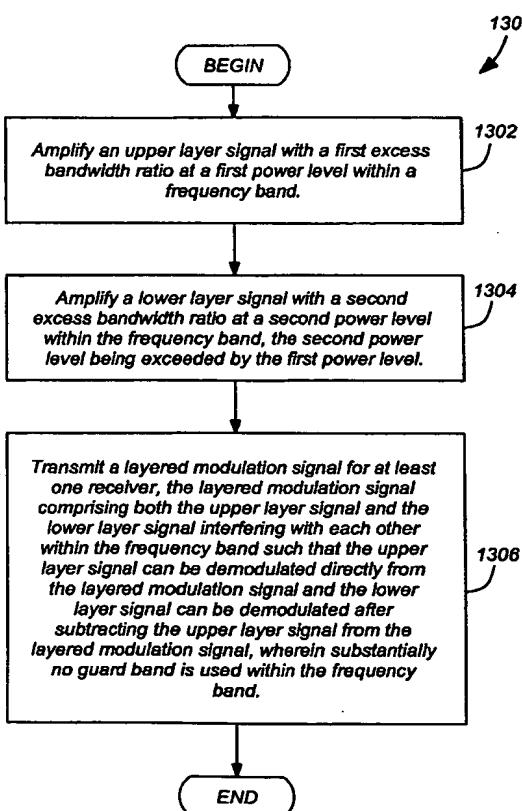
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(54) Title: MAXIMIZING POWER AND SPECTRAL EFFICIENCIES FOR LAYERED AND CONVENTIONAL MODULATIONS



(57) **Abstract:** Methods and apparatuses for maximizing power and spectral efficiencies in a wireless communication system are disclosed. The invention is particularly useful for layered modulation applications because power levels for such applications are relatively high. A layered modulation signal comprises an upper and a lower layer signal that interfere with each other within the same frequency band such that the upper layer signal can be demodulated directly from the layered modulation signal, and the lower layer signal can be demodulated after subtracting the first layer signal from the layered modulation signal. The invention applies one or more of the following four signal schemes in a communication signal including varying the symbol rate (rather than the code rate), reducing or eliminating the guard band, reducing excess signal bandwidth and employing layered modulation within the guard band of the legacy signal.